ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Report

September 24, 2021

Report to:
Holly Beggy
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tucson, AZ 85711

cc: David Krizek

Bill to:
Rosemont Copper Company
Hudbay Minerals
5255 E Williams Circle
Suite W1065
Tuscon, AZ 85711

Project ID:
ACZ Project ID: L68444

Holly Beggy:

Enclosed are the analytical results for sample(s) submitted to ACZ Laboratories, Inc. (ACZ) on September 13, 2021. This project has been assigned to ACZ's project number, L68444. Please reference this number in all future inquiries.

All analyses were performed according to ACZ's Quality Assurance Plan. The enclosed results relate only to the samples received under L68444. Each section of this report has been reviewed and approved by the appropriate Laboratory Supervisor, or a qualified substitute.

Except as noted, the test results for the methods and parameters listed on ACZ's current NELAC certificate letter (#ACZ) meet all requirements of NELAC.

This report shall be used or copied only in its entirety. ACZ is not responsible for the consequences arising from the use of a partial report.

All samples and sub-samples associated with this project will be disposed of after October 24, 2021. If the samples are determined to be hazardous, additional charges apply for disposal (typically $11/sample). If you would like the samples to be held longer than ACZ's stated policy or to be returned, please contact your Project Manager or Customer Service Representative for further details and associated costs. ACZ retains analytical raw data reports for ten years.

If you have any questions or other needs, please contact your Project Manager.

S. Habermehl

Scott Habermehl has reviewed
and approved this report.

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH

ACZ Sample ID: ***L68444-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 13:59	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.343		*	mg/L	0.05	0.25	09/17/21 20:29	jlw
Aluminum, total (3050)	M6010D ICP	101	17600		*	mg/Kg	5.05	25.3	09/18/21 0:34	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:15	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.368	B	*	mg/Kg	0.202	1.01	09/17/21 14:37	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00337			mg/L	0.0002	0.001	09/21/21 13:15	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	4.63			mg/Kg	0.101	0.505	09/17/21 14:37	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:15	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.550			mg/Kg	0.0253	0.126	09/17/21 14:37	bsu
Calcium (1312)	M6010D ICP	1	8.90			mg/L	0.1	0.5	09/17/21 20:29	jlw
Calcium, total (3050)	M6010D ICP	101	14100			mg/Kg	10.1	50.5	09/18/21 0:34	jlw
Copper (1312)	M6020B ICP-MS	1	0.0156			mg/L	0.0008	0.002	09/21/21 13:15	bsu
Copper, total (3050)	M6020B ICP-MS	505	284		*	mg/Kg	0.404	1.01	09/17/21 14:37	bsu
Iron (1312)	M6010D ICP	1	0.215		*	mg/L	0.06	0.15	09/17/21 20:29	jlw
Iron, total (3050)	M6010D ICP	101	18400		*	mg/Kg	6.06	15.2	09/18/21 0:34	jlw
Lead (1312)	M6020B ICP-MS	1	0.00030	B	*	mg/L	0.0001	0.0005	09/21/21 13:15	bsu
Lead, total (3050)	M6020B ICP-MS	505	17.9			mg/Kg	0.0505	0.253	09/17/21 14:37	bsu
Magnesium (1312)	M6010D ICP	1	0.96	B	*	mg/L	0.2	1	09/17/21 20:29	jlw
Magnesium, total (3050)	M6010D ICP	101	5120			mg/Kg	20.2	101	09/18/21 0:34	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:29	jlw
Manganese, total (3050)	M6010D ICP	101	567		*	mg/Kg	1.01	5.05	09/18/21 0:34	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:41	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	16.4		*	ng/g	2.73	13.65	09/20/21 10:48	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:29	jlw
Molybdenum, total (3050)	M6010D ICP	101	2.96	B		mg/Kg	2.02	10.1	09/18/21 0:34	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:15	bsu
Nickel, total (3050)	M6020B ICP-MS	505	9.70			mg/Kg	0.202	0.505	09/17/21 14:37	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00019	B	*	mg/L	0.0001	0.00025	09/21/21 13:15	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.146		*	mg/Kg	0.0505	0.126	09/17/21 14:37	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:15	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.221	B		mg/Kg	0.0505	0.253	09/17/21 14:37	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:29	jlw
Zinc, total (3050)	M6010D ICP	101	84.9		*	mg/Kg	2.02	5.05	09/18/21 0:34	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-19 SOUTH

ACZ Sample ID: ***L68444-01***
Date Sampled: *09/09/21 14:10*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.9		*	%	0.1	0.5	09/16/21 10:12	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	09/16/21 10:12	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.6		*	%	0.1	0.5	09/16/21 10:12	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.620		*	mmhos/cm	0.001	0.01	09/16/21 0:00	zln
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
Temperature		1	20.0		*	C	0.1	0.1	09/16/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
pH		1	7.7		*	units	0.1	0.1	09/16/21 0:00	zln
Solids, Percent	D2216-80	1	93.2		*	%	0.1	0.5	09/14/21 19:18	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:26	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:00	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 12:02	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 12:02	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:05	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:15	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:15	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 2:16	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: DI-20

ACZ Sample ID: ***L68444-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 14:40	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	<0.05	U	*	mg/L	0.05	0.25	09/17/21 20:37	jlw
Aluminum, total (3050)	M6010D ICP	102	24900		*	mg/Kg	5.1	25.5	09/18/21 0:38	jlw
Antimony (1312)	M6020B ICP-MS	1	0.00046	B	*	mg/L	0.0004	0.002	09/21/21 13:21	bsu
Antimony, total (3050)	M6020B ICP-MS	510	0.426	B	*	mg/Kg	0.204	1.02	09/17/21 14:46	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00171			mg/L	0.0002	0.001	09/21/21 13:21	bsu
Arsenic, total (3050)	M6020B ICP-MS	510	4.88			mg/Kg	0.102	0.51	09/17/21 14:46	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:21	bsu
Cadmium, total (3050)	M6020B ICP-MS	510	0.646			mg/Kg	0.0255	0.128	09/17/21 14:46	bsu
Calcium (1312)	M6010D ICP	1	24.7			mg/L	0.1	0.5	09/17/21 20:37	jlw
Calcium, total (3050)	M6010D ICP	102	16800			mg/Kg	10.2	51	09/18/21 0:38	jlw
Copper (1312)	M6020B ICP-MS	1	0.0179			mg/L	0.0008	0.002	09/21/21 13:21	bsu
Copper, total (3050)	M6020B ICP-MS	510	267		*	mg/Kg	0.408	1.02	09/17/21 14:46	bsu
Iron (1312)	M6010D ICP	1	<0.06	U	*	mg/L	0.06	0.15	09/17/21 20:37	jlw
Iron, total (3050)	M6010D ICP	102	24800		*	mg/Kg	6.12	15.3	09/18/21 0:38	jlw
Lead (1312)	M6020B ICP-MS	1	0.00016	B	*	mg/L	0.0001	0.0005	09/21/21 13:21	bsu
Lead, total (3050)	M6020B ICP-MS	510	21.5			mg/Kg	0.051	0.255	09/17/21 14:46	bsu
Magnesium (1312)	M6010D ICP	1	2.92		*	mg/L	0.2	1	09/17/21 20:37	jlw
Magnesium, total (3050)	M6010D ICP	102	6900			mg/Kg	20.4	102	09/18/21 0:38	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:37	jlw
Manganese, total (3050)	M6010D ICP	102	850		*	mg/Kg	1.02	5.1	09/18/21 0:38	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:42	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	33.8		*	ng/g	2.74	13.7	09/20/21 11:04	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:37	jlw
Molybdenum, total (3050)	M6010D ICP	102	3.54	B		mg/Kg	2.04	10.2	09/18/21 0:38	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00116		*	mg/L	0.0004	0.001	09/21/21 13:21	bsu
Nickel, total (3050)	M6020B ICP-MS	510	12.9			mg/Kg	0.204	0.51	09/17/21 14:46	bsu
Selenium (1312)	M6020B ICP-MS	1	0.00017	B	*	mg/L	0.0001	0.00025	09/21/21 13:21	bsu
Selenium, total (3050)	M6020B ICP-MS	510	0.213		*	mg/Kg	0.051	0.128	09/17/21 14:46	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:21	bsu
Thallium, total (3050)	M6020B ICP-MS	510	0.442			mg/Kg	0.051	0.255	09/17/21 14:46	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:37	jlw
Zinc, total (3050)	M6010D ICP	102	99.2		*	mg/Kg	2.04	5.1	09/18/21 0:38	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-20

ACZ Sample ID: ***L68444-02***
Date Sampled: *09/09/21 13:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.6		*	%	0.1	0.5	09/16/21 10:24	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.5		*	%	0.1	0.5	09/16/21 10:24	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	1.1		*	%	0.1	0.5	09/16/21 10:24	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.778		*	mmhos/cm	0.001	0.01	09/16/21 0:00	zln
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
Temperature		1	20.4		*	C	0.1	0.1	09/16/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/16/21 0:00	zln
pH		1	7.7		*	units	0.1	0.1	09/16/21 0:00	zln
Solids, Percent	D2216-80	1	74.8		*	%	0.1	0.5	09/14/21 20:31	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:30	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:03	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 13:07	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 13:07	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:07	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:20	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:20	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 4:18	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: DI-21

ACZ Sample ID: ***L68444-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 15:01	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.692		*	mg/L	0.05	0.25	09/17/21 20:48	jlw
Aluminum, total (3050)	M6010D ICP	101	2810		*	mg/Kg	5.05	25.3	09/18/21 0:50	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:22	bsu
Antimony, total (3050)	M6020B ICP-MS	505	<0.202	U	*	mg/Kg	0.202	1.01	09/17/21 14:48	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00185			mg/L	0.0002	0.001	09/21/21 13:22	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	3.36			mg/Kg	0.101	0.505	09/17/21 14:48	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:22	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.110	B		mg/Kg	0.0253	0.126	09/17/21 14:48	bsu
Calcium (1312)	M6010D ICP	1	6.45			mg/L	0.1	0.5	09/17/21 20:48	jlw
Calcium, total (3050)	M6010D ICP	101	3930			mg/Kg	10.1	50.5	09/18/21 0:50	jlw
Copper (1312)	M6020B ICP-MS	1	0.00164	B		mg/L	0.0008	0.002	09/21/21 13:22	bsu
Copper, total (3050)	M6020B ICP-MS	505	6.00		*	mg/Kg	0.404	1.01	09/17/21 14:48	bsu
Iron (1312)	M6010D ICP	1	0.283		*	mg/L	0.06	0.15	09/17/21 20:48	jlw
Iron, total (3050)	M6010D ICP	101	5350		*	mg/Kg	6.06	15.2	09/18/21 0:50	jlw
Lead (1312)	M6020B ICP-MS	1	0.00045	B	*	mg/L	0.0001	0.0005	09/21/21 13:22	bsu
Lead, total (3050)	M6020B ICP-MS	505	5.90			mg/Kg	0.0505	0.253	09/17/21 14:48	bsu
Magnesium (1312)	M6010D ICP	1	0.26	B	*	mg/L	0.2	1	09/17/21 20:48	jlw
Magnesium, total (3050)	M6010D ICP	101	1030			mg/Kg	20.2	101	09/18/21 0:50	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:48	jlw
Manganese, total (3050)	M6010D ICP	101	103		*	mg/Kg	1.01	5.05	09/18/21 0:50	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:45	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.07	U	*	ng/g	2.07	10.35	09/20/21 11:27	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:48	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/18/21 0:50	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:22	bsu
Nickel, total (3050)	M6020B ICP-MS	505	2.28			mg/Kg	0.202	0.505	09/17/21 14:48	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:22	bsu
Selenium, total (3050)	M6020B ICP-MS	505	<0.0505	U	*	mg/Kg	0.0505	0.126	09/17/21 14:48	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:22	bsu
Thallium, total (3050)	M6020B ICP-MS	505	<0.0505	U		mg/Kg	0.0505	0.253	09/17/21 14:48	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:48	jlw
Zinc, total (3050)	M6010D ICP	101	13.6		*	mg/Kg	2.02	5.05	09/18/21 0:50	jlw

Hudbay Minerals
Project ID:
Sample ID: DI-21

ACZ Sample ID: ***L68444-03***
Date Sampled: *09/09/21 11:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	09/16/21 10:36	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	09/16/21 10:36	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 10:36	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.317		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	20.7		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.1		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	99.7		*	%	0.1	0.5	09/14/21 21:45	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	<0.01	U	*	%	0.01	0.1	09/16/21 9:33	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:06	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 13:29	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 13:29	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:08	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:25	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:25	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 5:20	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-2

ACZ Sample ID: ***L68444-07***
Date Sampled: *09/09/21 12:06*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 15:21	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.432		*	mg/L	0.05	0.25	09/17/21 20:52	jlw
Aluminum, total (3050)	M6010D ICP	100	3490		*	mg/Kg	5	25	09/18/21 0:58	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:24	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.314	B	*	mg/Kg	0.2	1	09/17/21 14:49	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00186			mg/L	0.0002	0.001	09/21/21 13:24	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	3.84			mg/Kg	0.1	0.5	09/17/21 14:49	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:24	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.162			mg/Kg	0.025	0.125	09/17/21 14:49	bsu
Calcium (1312)	M6010D ICP	1	5.43			mg/L	0.1	0.5	09/17/21 20:52	jlw
Calcium, total (3050)	M6010D ICP	100	3680			mg/Kg	10	50	09/18/21 0:58	jlw
Copper (1312)	M6020B ICP-MS	1	0.00180	B		mg/L	0.0008	0.002	09/21/21 13:24	bsu
Copper, total (3050)	M6020B ICP-MS	500	16.5		*	mg/Kg	0.4	1	09/17/21 14:49	bsu
Iron (1312)	M6010D ICP	1	0.237		*	mg/L	0.06	0.15	09/17/21 20:52	jlw
Iron, total (3050)	M6010D ICP	100	11300		*	mg/Kg	6	15	09/18/21 0:58	jlw
Lead (1312)	M6020B ICP-MS	1	0.00045	B	*	mg/L	0.0001	0.0005	09/21/21 13:24	bsu
Lead, total (3050)	M6020B ICP-MS	500	9.54			mg/Kg	0.05	0.25	09/17/21 14:49	bsu
Magnesium (1312)	M6010D ICP	1	0.41	B	*	mg/L	0.2	1	09/17/21 20:52	jlw
Magnesium, total (3050)	M6010D ICP	100	1640			mg/Kg	20	100	09/18/21 0:58	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 20:52	jlw
Manganese, total (3050)	M6010D ICP	100	131		*	mg/Kg	1	5	09/18/21 0:58	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:46	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	3.17	B	*	ng/g	2.03	10.15	09/20/21 11:35	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 20:52	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/18/21 0:58	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:24	bsu
Nickel, total (3050)	M6020B ICP-MS	500	4.59			mg/Kg	0.2	0.5	09/17/21 14:49	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:24	bsu
Selenium, total (3050)	M6020B ICP-MS	500	0.0939	B	*	mg/Kg	0.05	0.125	09/17/21 14:49	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:24	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0507	B		mg/Kg	0.05	0.25	09/17/21 14:49	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 20:52	jlw
Zinc, total (3050)	M6010D ICP	100	24.2		*	mg/Kg	2	5	09/18/21 0:58	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-2

ACZ Sample ID: ***L68444-07***
Date Sampled: *09/09/21 12:06*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 10:48	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	09/16/21 10:48	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 10:48	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.329		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	20.7		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.0		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	99.2		*	%	0.1	0.5	09/15/21 2:39	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:37	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:10	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 13:50	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 13:50	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:10	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:30	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:30	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 6:21	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-2B

ACZ Sample ID: ***L68444-08***
Date Sampled: *09/09/21 12:06*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 15:42	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.556		*	mg/L	0.05	0.25	09/17/21 21:00	jlw
Aluminum, total (3050)	M6010D ICP	100	3080		*	mg/Kg	5	25	09/18/21 1:02	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:26	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.335	B	*	mg/Kg	0.2	1	09/17/21 14:51	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00162			mg/L	0.0002	0.001	09/21/21 13:26	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.77			mg/Kg	0.1	0.5	09/17/21 14:51	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:26	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.221			mg/Kg	0.025	0.125	09/17/21 14:51	bsu
Calcium (1312)	M6010D ICP	1	5.74			mg/L	0.1	0.5	09/17/21 21:00	jlw
Calcium, total (3050)	M6010D ICP	100	8220			mg/Kg	10	50	09/18/21 1:02	jlw
Copper (1312)	M6020B ICP-MS	1	0.00244			mg/L	0.0008	0.002	09/21/21 13:26	bsu
Copper, total (3050)	M6020B ICP-MS	500	10.7		*	mg/Kg	0.4	1	09/17/21 14:51	bsu
Iron (1312)	M6010D ICP	1	0.291		*	mg/L	0.06	0.15	09/17/21 21:00	jlw
Iron, total (3050)	M6010D ICP	100	8930		*	mg/Kg	6	15	09/18/21 1:02	jlw
Lead (1312)	M6020B ICP-MS	1	0.00059		*	mg/L	0.0001	0.0005	09/21/21 13:26	bsu
Lead, total (3050)	M6020B ICP-MS	500	7.92			mg/Kg	0.05	0.25	09/17/21 14:51	bsu
Magnesium (1312)	M6010D ICP	1	0.44	B	*	mg/L	0.2	1	09/17/21 21:00	jlw
Magnesium, total (3050)	M6010D ICP	100	1390			mg/Kg	20	100	09/18/21 1:02	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:00	jlw
Manganese, total (3050)	M6010D ICP	100	245		*	mg/Kg	1	5	09/18/21 1:02	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:47	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	2.88	B	*	ng/g	2.08	10.4	09/20/21 11:44	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:00	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/18/21 1:02	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:26	bsu
Nickel, total (3050)	M6020B ICP-MS	500	3.54			mg/Kg	0.2	0.5	09/17/21 14:51	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:26	bsu
Selenium, total (3050)	M6020B ICP-MS	500	<0.05	U	*	mg/Kg	0.05	0.125	09/17/21 14:51	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:26	bsu
Thallium, total (3050)	M6020B ICP-MS	500	0.0582	B		mg/Kg	0.05	0.25	09/17/21 14:51	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:00	jlw
Zinc, total (3050)	M6010D ICP	100	21.5		*	mg/Kg	2	5	09/18/21 1:02	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-2B

ACZ Sample ID: ***L68444-08***
Date Sampled: *09/09/21 12:06*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:00	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:00	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:00	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.312		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.9		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.1		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	98.8		*	%	0.1	0.5	09/15/21 3:52	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.01	B	*	%	0.01	0.1	09/16/21 9:41	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:13	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 14:12	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 14:12	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:11	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:35	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:35	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 7:22	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-3

ACZ Sample ID: ***L68444-09***
Date Sampled: *09/09/21 11:20*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 16:02	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.600		*	mg/L	0.05	0.25	09/17/21 21:04	jlw
Aluminum, total (3050)	M6010D ICP	100	2690		*	mg/Kg	5	25	09/18/21 1:06	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:28	bsu
Antimony, total (3050)	M6020B ICP-MS	500	<0.2	U	*	mg/Kg	0.2	1	09/17/21 14:53	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00114			mg/L	0.0002	0.001	09/21/21 13:28	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.41			mg/Kg	0.1	0.5	09/17/21 14:53	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:28	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.129			mg/Kg	0.025	0.125	09/17/21 14:53	bsu
Calcium (1312)	M6010D ICP	1	6.22			mg/L	0.1	0.5	09/17/21 21:04	jlw
Calcium, total (3050)	M6010D ICP	100	8520			mg/Kg	10	50	09/18/21 1:06	jlw
Copper (1312)	M6020B ICP-MS	1	0.00190	B		mg/L	0.0008	0.002	09/21/21 13:28	bsu
Copper, total (3050)	M6020B ICP-MS	500	7.31		*	mg/Kg	0.4	1	09/17/21 14:53	bsu
Iron (1312)	M6010D ICP	1	0.171		*	mg/L	0.06	0.15	09/17/21 21:04	jlw
Iron, total (3050)	M6010D ICP	100	6620		*	mg/Kg	6	15	09/18/21 1:06	jlw
Lead (1312)	M6020B ICP-MS	1	0.00043	B	*	mg/L	0.0001	0.0005	09/21/21 13:28	bsu
Lead, total (3050)	M6020B ICP-MS	500	6.38			mg/Kg	0.05	0.25	09/17/21 14:53	bsu
Magnesium (1312)	M6010D ICP	1	0.34	B	*	mg/L	0.2	1	09/17/21 21:04	jlw
Magnesium, total (3050)	M6010D ICP	100	1130			mg/Kg	20	100	09/18/21 1:06	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:04	jlw
Manganese, total (3050)	M6010D ICP	100	84.9		*	mg/Kg	1	5	09/18/21 1:06	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:48	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.42	B	*	ng/g	2.57	12.85	09/20/21 11:52	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:04	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/18/21 1:06	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:28	bsu
Nickel, total (3050)	M6020B ICP-MS	500	2.91			mg/Kg	0.2	0.5	09/17/21 14:53	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:28	bsu
Selenium, total (3050)	M6020B ICP-MS	500	<0.05	U	*	mg/Kg	0.05	0.125	09/17/21 14:53	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:28	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	09/17/21 14:53	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:04	jlw
Zinc, total (3050)	M6010D ICP	100	19.1		*	mg/Kg	2	5	09/18/21 1:06	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-3

ACZ Sample ID: ***L68444-09***
Date Sampled: *09/09/21 11:20*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.2	B	*	%	0.1	0.5	09/16/21 11:12	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	09/16/21 11:12	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.1	B	*	%	0.1	0.5	09/16/21 11:12	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.260		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.1		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.0		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	99.1		*	%	0.1	0.5	09/15/21 5:06	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:45	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:16	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 14:33	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 14:33	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:14	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:40	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:40	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 8:23	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-4

ACZ Sample ID: ***L68444-10***
Date Sampled: *09/09/21 11:35*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 16:23	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.613		*	mg/L	0.05	0.25	09/17/21 21:08	jlw
Aluminum, total (3050)	M6010D ICP	101	2740		*	mg/Kg	5.05	25.3	09/18/21 1:09	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:32	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.305	B	*	mg/Kg	0.202	1.01	09/17/21 14:55	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00147			mg/L	0.0002	0.001	09/21/21 13:32	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	2.72			mg/Kg	0.101	0.505	09/17/21 14:55	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:32	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.130			mg/Kg	0.0253	0.126	09/17/21 14:55	bsu
Calcium (1312)	M6010D ICP	1	5.66			mg/L	0.1	0.5	09/17/21 21:08	jlw
Calcium, total (3050)	M6010D ICP	101	4660			mg/Kg	10.1	50.5	09/18/21 1:09	jlw
Copper (1312)	M6020B ICP-MS	1	0.00181	B		mg/L	0.0008	0.002	09/21/21 13:32	bsu
Copper, total (3050)	M6020B ICP-MS	505	14.9		*	mg/Kg	0.404	1.01	09/17/21 14:55	bsu
Iron (1312)	M6010D ICP	1	0.372		*	mg/L	0.06	0.15	09/17/21 21:08	jlw
Iron, total (3050)	M6010D ICP	101	20400		*	mg/Kg	6.06	15.2	09/18/21 1:09	jlw
Lead (1312)	M6020B ICP-MS	1	0.00145		*	mg/L	0.0001	0.0005	09/21/21 13:32	bsu
Lead, total (3050)	M6020B ICP-MS	505	8.83			mg/Kg	0.0505	0.253	09/17/21 14:55	bsu
Magnesium (1312)	M6010D ICP	1	0.34	B	*	mg/L	0.2	1	09/17/21 21:08	jlw
Magnesium, total (3050)	M6010D ICP	101	1160			mg/Kg	20.2	101	09/18/21 1:09	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:08	jlw
Manganese, total (3050)	M6010D ICP	101	129		*	mg/Kg	1.01	5.05	09/18/21 1:09	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:49	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.35	B	*	ng/g	2.2	11	09/20/21 12:00	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:08	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/18/21 1:09	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:32	bsu
Nickel, total (3050)	M6020B ICP-MS	505	4.52			mg/Kg	0.202	0.505	09/17/21 14:55	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:32	bsu
Selenium, total (3050)	M6020B ICP-MS	505	<0.0505	U	*	mg/Kg	0.0505	0.126	09/17/21 14:55	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:32	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.0919	B		mg/Kg	0.0505	0.253	09/17/21 14:55	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:08	jlw
Zinc, total (3050)	M6010D ICP	101	22.9		*	mg/Kg	2.02	5.05	09/18/21 1:09	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-4

ACZ Sample ID: ***L68444-10***
Date Sampled: *09/09/21 11:35*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:24	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:24	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:24	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.250		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.0		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	7.7		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	98.6		*	%	0.1	0.5	09/15/21 6:19	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 9:48	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:20	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 14:55	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 14:55	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:15	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:45	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:45	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 9:24	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-5

ACZ Sample ID: ***L68444-11***
Date Sampled: *09/09/21 09:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 16:44	kja
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.539		*	mg/L	0.05	0.25	09/17/21 21:12	jlw
Aluminum, total (3050)	M6010D ICP	101	2410		*	mg/Kg	5.05	25.3	09/18/21 1:13	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:37	bsu
Antimony, total (3050)	M6020B ICP-MS	505	<0.202	U	*	mg/Kg	0.202	1.01	09/17/21 14:59	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00191			mg/L	0.0002	0.001	09/21/21 13:37	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	1.33			mg/Kg	0.101	0.505	09/17/21 14:59	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:37	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.0795	B		mg/Kg	0.0253	0.126	09/17/21 14:59	bsu
Calcium (1312)	M6010D ICP	1	5.83			mg/L	0.1	0.5	09/17/21 21:12	jlw
Calcium, total (3050)	M6010D ICP	101	2890			mg/Kg	10.1	50.5	09/18/21 1:13	jlw
Copper (1312)	M6020B ICP-MS	1	0.00123	B		mg/L	0.0008	0.002	09/21/21 13:37	bsu
Copper, total (3050)	M6020B ICP-MS	505	5.10		*	mg/Kg	0.404	1.01	09/17/21 14:59	bsu
Iron (1312)	M6010D ICP	1	0.158		*	mg/L	0.06	0.15	09/17/21 21:12	jlw
Iron, total (3050)	M6010D ICP	101	4560		*	mg/Kg	6.06	15.2	09/18/21 1:13	jlw
Lead (1312)	M6020B ICP-MS	1	0.00039	B	*	mg/L	0.0001	0.0005	09/21/21 13:37	bsu
Lead, total (3050)	M6020B ICP-MS	505	3.72			mg/Kg	0.0505	0.253	09/17/21 14:59	bsu
Magnesium (1312)	M6010D ICP	1	0.36	B	*	mg/L	0.2	1	09/17/21 21:12	jlw
Magnesium, total (3050)	M6010D ICP	101	1080			mg/Kg	20.2	101	09/18/21 1:13	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:12	jlw
Manganese, total (3050)	M6010D ICP	101	85.5		*	mg/Kg	1.01	5.05	09/18/21 1:13	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:50	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	<2.61	U	*	ng/g	2.61	13.05	09/20/21 12:08	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:12	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/18/21 1:13	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:37	bsu
Nickel, total (3050)	M6020B ICP-MS	505	2.43			mg/Kg	0.202	0.505	09/17/21 14:59	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:37	bsu
Selenium, total (3050)	M6020B ICP-MS	505	<0.0505	U	*	mg/Kg	0.0505	0.126	09/17/21 14:59	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:37	bsu
Thallium, total (3050)	M6020B ICP-MS	505	<0.0505	U		mg/Kg	0.0505	0.253	09/17/21 14:59	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:12	jlw
Zinc, total (3050)	M6010D ICP	101	13.0		*	mg/Kg	2.02	5.05	09/18/21 1:13	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-5

ACZ Sample ID: ***L68444-11***
Date Sampled: *09/09/21 09:45*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/16/21 11:36	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.3	B	*	%	0.1	0.5	09/16/21 11:36	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:36	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.261		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.1		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.0		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	97.7		*	%	0.1	0.5	09/15/21 7:33	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.01	B	*	%	0.01	0.1	09/16/21 9:52	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:23	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 15:16	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 15:16	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:17	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:50	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:50	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 10:25	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-0

ACZ Sample ID: ***L68444-12***
Date Sampled: *09/09/21 13:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 17:04	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.918		*	mg/L	0.05	0.25	09/17/21 21:16	jlw
Aluminum, total (3050)	M6010D ICP	100	3890		*	mg/Kg	5	25	09/18/21 1:17	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:39	bsu
Antimony, total (3050)	M6020B ICP-MS	500	0.364	B	*	mg/Kg	0.2	1	09/17/21 15:04	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00174			mg/L	0.0002	0.001	09/21/21 13:39	bsu
Arsenic, total (3050)	M6020B ICP-MS	500	2.67			mg/Kg	0.1	0.5	09/17/21 15:04	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:39	bsu
Cadmium, total (3050)	M6020B ICP-MS	500	0.148			mg/Kg	0.025	0.125	09/17/21 15:04	bsu
Calcium (1312)	M6010D ICP	1	4.48			mg/L	0.1	0.5	09/17/21 21:16	jlw
Calcium, total (3050)	M6010D ICP	100	2100			mg/Kg	10	50	09/18/21 1:17	jlw
Copper (1312)	M6020B ICP-MS	1	0.00285			mg/L	0.0008	0.002	09/21/21 13:39	bsu
Copper, total (3050)	M6020B ICP-MS	500	12.1		*	mg/Kg	0.4	1	09/17/21 15:04	bsu
Iron (1312)	M6010D ICP	1	0.468		*	mg/L	0.06	0.15	09/17/21 21:16	jlw
Iron, total (3050)	M6010D ICP	100	8260		*	mg/Kg	6	15	09/18/21 1:17	jlw
Lead (1312)	M6020B ICP-MS	1	0.00082		*	mg/L	0.0001	0.0005	09/21/21 13:39	bsu
Lead, total (3050)	M6020B ICP-MS	500	8.60			mg/Kg	0.05	0.25	09/17/21 15:04	bsu
Magnesium (1312)	M6010D ICP	1	0.37	B	*	mg/L	0.2	1	09/17/21 21:16	jlw
Magnesium, total (3050)	M6010D ICP	100	1460			mg/Kg	20	100	09/18/21 1:17	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:16	jlw
Manganese, total (3050)	M6010D ICP	100	119		*	mg/Kg	1	5	09/18/21 1:17	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:51	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	5.53	B	*	ng/g	2.4	12	09/20/21 12:16	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:16	jlw
Molybdenum, total (3050)	M6010D ICP	100	<2	U		mg/Kg	2	10	09/18/21 1:17	jlw
Nickel (1312)	M6020B ICP-MS	1	0.00042	B	*	mg/L	0.0004	0.001	09/21/21 13:39	bsu
Nickel, total (3050)	M6020B ICP-MS	500	4.03			mg/Kg	0.2	0.5	09/17/21 15:04	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:39	bsu
Selenium, total (3050)	M6020B ICP-MS	500	<0.05	U	*	mg/Kg	0.05	0.125	09/17/21 15:04	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:39	bsu
Thallium, total (3050)	M6020B ICP-MS	500	<0.05	U		mg/Kg	0.05	0.25	09/17/21 15:04	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:16	jlw
Zinc, total (3050)	M6010D ICP	100	22.5		*	mg/Kg	2	5	09/18/21 1:17	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-0

ACZ Sample ID: ***L68444-12***
Date Sampled: *09/09/21 13:30*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.1	B	*	%	0.1	0.5	09/16/21 11:48	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.1	B	*	%	0.1	0.5	09/16/21 11:48	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	<0.1	U	*	%	0.1	0.5	09/16/21 11:48	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.225		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.0		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	8.0		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	96.5		*	%	0.1	0.5	09/15/21 8:46	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.01	B	*	%	0.01	0.1	09/16/21 9:56	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:26	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 15:38	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 15:38	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:18	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 8:55	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 8:55	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 11:26	zln

Arizona license number: AZ0102

Hudbay Minerals
Project ID:
Sample ID: SCR-SJ

ACZ Sample ID: ***L68444-13***
Date Sampled: *09/09/21 12:50*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Inorganic Prep

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Total Hot Plate Digestion (1312)	M3010A ICP-MS								09/17/21 8:30	mfm
Total Hot Plate Digestion (1312)	M3010A ICP								09/16/21 17:25	kja

Metals Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Aluminum (1312)	M6010D ICP	1	0.168	B	*	mg/L	0.05	0.25	09/17/21 21:20	jlw
Aluminum, total (3050)	M6010D ICP	101	9730		*	mg/Kg	5.05	25.3	09/18/21 1:21	jlw
Antimony (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.002	09/21/21 13:41	bsu
Antimony, total (3050)	M6020B ICP-MS	505	0.423	B	*	mg/Kg	0.202	1.01	09/17/21 15:06	bsu
Arsenic (1312)	M6020B ICP-MS	1	0.00299			mg/L	0.0002	0.001	09/21/21 13:41	bsu
Arsenic, total (3050)	M6020B ICP-MS	505	5.74			mg/Kg	0.101	0.505	09/17/21 15:06	bsu
Cadmium (1312)	M6020B ICP-MS	1	<0.00005	U	*	mg/L	0.00005	0.00025	09/21/21 13:41	bsu
Cadmium, total (3050)	M6020B ICP-MS	505	0.349			mg/Kg	0.0253	0.126	09/17/21 15:06	bsu
Calcium (1312)	M6010D ICP	1	5.78			mg/L	0.1	0.5	09/17/21 21:20	jlw
Calcium, total (3050)	M6010D ICP	101	6880			mg/Kg	10.1	50.5	09/18/21 1:21	jlw
Copper (1312)	M6020B ICP-MS	1	0.00248			mg/L	0.0008	0.002	09/21/21 13:41	bsu
Copper, total (3050)	M6020B ICP-MS	505	30.2		*	mg/Kg	0.404	1.01	09/17/21 15:06	bsu
Iron (1312)	M6010D ICP	1	0.062	B	*	mg/L	0.06	0.15	09/17/21 21:20	jlw
Iron, total (3050)	M6010D ICP	101	12800		*	mg/Kg	6.06	15.2	09/18/21 1:21	jlw
Lead (1312)	M6020B ICP-MS	1	0.00015	B	*	mg/L	0.0001	0.0005	09/21/21 13:41	bsu
Lead, total (3050)	M6020B ICP-MS	505	15.8			mg/Kg	0.0505	0.253	09/17/21 15:06	bsu
Magnesium (1312)	M6010D ICP	1	0.49	B	*	mg/L	0.2	1	09/17/21 21:20	jlw
Magnesium, total (3050)	M6010D ICP	101	3000			mg/Kg	20.2	101	09/18/21 1:21	jlw
Manganese (1312)	M6010D ICP	1	<0.01	U	*	mg/L	0.01	0.05	09/17/21 21:20	jlw
Manganese, total (3050)	M6010D ICP	101	358		*	mg/Kg	1.01	5.05	09/18/21 1:21	jlw
Mercury (1312)	M7470A CVAA	1	<0.0002	U	*	mg/L	0.0002	0.001	09/16/21 12:52	mlh
Mercury by Direct Combustion AA	M7473 CVAAS	1	4.99	B	*	ng/g	2.25	11.25	09/20/21 12:24	mlh
Molybdenum (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.1	09/17/21 21:20	jlw
Molybdenum, total (3050)	M6010D ICP	101	<2.02	U		mg/Kg	2.02	10.1	09/18/21 1:21	jlw
Nickel (1312)	M6020B ICP-MS	1	<0.0004	U	*	mg/L	0.0004	0.001	09/21/21 13:41	bsu
Nickel, total (3050)	M6020B ICP-MS	505	7.16			mg/Kg	0.202	0.505	09/17/21 15:06	bsu
Selenium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.00025	09/21/21 13:41	bsu
Selenium, total (3050)	M6020B ICP-MS	505	0.113	B	*	mg/Kg	0.0505	0.126	09/17/21 15:06	bsu
Thallium (1312)	M6020B ICP-MS	1	<0.0001	U	*	mg/L	0.0001	0.0005	09/21/21 13:41	bsu
Thallium, total (3050)	M6020B ICP-MS	505	0.120	B		mg/Kg	0.0505	0.253	09/17/21 15:06	bsu
Zinc (1312)	M6010D ICP	1	<0.02	U	*	mg/L	0.02	0.05	09/17/21 21:20	jlw
Zinc, total (3050)	M6010D ICP	101	47.5		*	mg/Kg	2.02	5.05	09/18/21 1:21	jlw

Hudbay Minerals
Project ID:
Sample ID: SCR-SJ

ACZ Sample ID: ***L68444-13***
Date Sampled: *09/09/21 12:50*
Date Received: *09/13/21*
Sample Matrix: *Soil*

Soil Analysis

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.5		*	%	0.1	0.5	09/16/21 12:00	jpb
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	1	0.2	B	*	%	0.1	0.5	09/16/21 12:00	jpb
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	1	0.3	B	*	%	0.1	0.5	09/16/21 12:00	jpb
Conductivity @25C	SM2510B									
Conductivity		1	0.699		*	mmhos/cm	0.001	0.01	09/17/21 0:00	zln
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
Temperature		1	21.0		*	C	0.1	0.1	09/17/21 0:00	zln
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2									
Max Particle Size		1	2000		*	um			09/17/21 0:00	zln
pH		1	7.8		*	units	0.1	0.1	09/17/21 0:00	zln
Solids, Percent	D2216-80	1	97.2		*	%	0.1	0.5	09/15/21 10:00	zln
Sulfur, total	ASTM D-4239-85C, LECO Furnace	1	0.02	B	*	%	0.01	0.1	09/16/21 10:00	jpb

Soil Preparation

Parameter	EPA Method	Dilution	Result	Qual	XQ	Units	MDL	PQL	Date	Analyst
Air Dry at 34 Degrees C	USDA No. 1, 1972				*				09/14/21 9:30	mep
Digestion - Hot Plate	M3050B ICP-MS								09/16/21 16:00	mep
Digestion - Hot Plate	M3050B ICP								09/16/21 16:00	mep
Saturated Paste Extraction	USDA No. 60 (2)				*				09/16/21 13:20	zln
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2				*				09/15/21 9:00	jpb
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2				*				09/15/21 9:00	jpb
Synthetic Precip. Leaching Procedure	M1312								09/15/21 13:29	zln

Arizona license number: AZ0102

Report Header Explanations

Batch	A distinct set of samples analyzed at a specific time
Found	Value of the QC Type of interest
Limit	Upper limit for RPD, in %.
Lower	Lower Recovery Limit, in % (except for LCSS, mg/Kg)
MDL	Method Detection Limit. Same as Minimum Reporting Limit unless omitted or equal to the PQL (see comment #5). Allows for instrument and annual fluctuations.
PCN/SCN	A number assigned to reagents/standards to trace to the manufacturer's certificate of analysis
PQL	Practical Quantitation Limit. Synonymous with the EPA term "minimum level".
QC	True Value of the Control Sample or the amount added to the Spike
Rec	Recovered amount of the true value or spike added, in % (except for LCSS, mg/Kg)
RPD	Relative Percent Difference, calculation used for Duplicate QC Types
Upper	Upper Recovery Limit, in % (except for LCSS, mg/Kg)
Sample	Value of the Sample of interest

QC Sample Types

AS	Analytical Spike (Post Digestion)	*LCSWD*	Laboratory Control Sample - Water Duplicate
ASD	Analytical Spike (Post Digestion) Duplicate	*LFB*	Laboratory Fortified Blank
CCB	Continuing Calibration Blank	*LFM*	Laboratory Fortified Matrix
CCV	Continuing Calibration Verification standard	*LFMD*	Laboratory Fortified Matrix Duplicate
DUP	Sample Duplicate	*LRB*	Laboratory Reagent Blank
ICB	Initial Calibration Blank	*MS*	Matrix Spike
ICV	Initial Calibration Verification standard	*MSD*	Matrix Spike Duplicate
ICSAB	Inter-element Correction Standard - A plus B solutions	*PBS*	Prep Blank - Soil
LCSS	Laboratory Control Sample - Soil	*PBW*	Prep Blank - Water
LCSSD	Laboratory Control Sample - Soil Duplicate	*PQV*	Practical Quantitation Verification standard
LCSW	Laboratory Control Sample - Water	*SDL*	Serial Dilution

QC Sample Type Explanations

Blanks	Verifies that there is no or minimal contamination in the prep method or calibration procedure.
Control Samples	Verifies the accuracy of the method, including the prep procedure.
Duplicates	Verifies the precision of the instrument and/or method.
Spikes/Fortified Matrix	Determines sample matrix interferences, if any.
Standard	Verifies the validity of the calibration.

ACZ Qualifiers (Qual)

B	Analyte concentration detected at a value between MDL and PQL. The associated value is an estimated quantity.
H	Analysis exceeded method hold time. pH is a field test with an immediate hold time.
L	Target analyte response was below the laboratory defined negative threshold.
U	The material was analyzed for, but was not detected above the level of the associated value. The associated value is either the sample quantitation limit or the sample detection limit.

Method References

(1) EPA 600/4-83-020. Methods for Chemical Analysis of Water and Wastes, March 1983.
(2) EPA 600/R-93-100. Methods for the Determination of Inorganic Substances in Environmental Samples, August 1993.
(3) EPA 600/R-94-111. Methods for the Determination of Metals in Environmental Samples - Supplement I, May 1994.
(4) EPA SW-846. Test Methods for Evaluating Solid Waste.
(5) Standard Methods for the Examination of Water and Wastewater.

Comments

(1) QC results calculated from raw data. Results may vary slightly if the rounded values are used in the calculations.
(2) Soil, Sludge, and Plant matrices for Inorganic analyses are reported on a dry weight basis.
(3) Animal matrices for Inorganic analyses are reported on an "as received" basis.
(4) An asterisk in the "XQ" column indicates there is an extended qualifier and/or certification qualifier associated with the result.
(5) If the MDL equals the PQL or the MDL column is omitted, the PQL is the reporting limit.

For a complete list of ACZ's Extended Qualifiers, please click:
https://acz.com/wp-content/uploads/2019/04/Ext-Qual-List.pdf

REP001.03.15.02

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Aluminum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.905	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.15	0.15			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.15	0.15			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	1.0008		.968	mg/L	97	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	1.0008	.13	1.159	mg/L	103	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	1.0008	.13	1.151	mg/L	102	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			.343	.154	mg/L				76	20	RA

Aluminum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.047	mg/L	102	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.15	0.15			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-15	15			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	8130		8806	mg/Kg		3920	12300			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	8130		8820	mg/Kg		3920	12300	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	103.0824	23500	29911.2	mg/Kg	6219	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	103.0824	23500	29458	mg/Kg	5780	75	125	2	20	M3

Antimony (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.0201		.02015	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0012	0.0012			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0012	0.0012			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.01	U	.00987	mg/L	99	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.01	U	.0098	mg/L	98	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.01		.00966	mg/L	97	80	120			

Antimony, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.0201		.01943	mg/L	97	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0012	0.0012			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.6	0.6			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	134		90.46569	mg/Kg		4.56	264			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	134		88.99535	mg/Kg		4.56	264	2	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	5.05	.368	1.80944	mg/Kg	29	75	125			M2
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	5.05	.368	1.75854	mg/Kg	28	75	125	3	20	M2

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Arsenic (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05007	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0006	0.0006			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0006	0.0006			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	.00152	.04886	mg/L	95	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	.00152	.04891	mg/L	95	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.00337	.00306	mg/L				10	20	
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.047	mg/L	94	80	120			

Arsenic, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05023	mg/L	100	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0006	0.0006			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.3	0.3			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	156		152.25262	mg/Kg		129	183			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	156		154.30212	mg/Kg		129	183	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	4.63	27.04534	mg/Kg	89	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	4.63	30.72935	mg/Kg	103	75	125	13	20	

Cadmium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.049871	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.00015	0.00015			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.00015	0.00015			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	U	.04574	mg/L	91	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	U	.04564	mg/L	91	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.044741	mg/L	89	80	120			

Cadmium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.051118	mg/L	102	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.00015	0.00015			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.075	0.075			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	137		128.25744	mg/Kg		113	160			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	137		128.93060	mg/Kg		113	160	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	.55	24.938178	mg/Kg	96	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	.55	29.162527	mg/Kg	113	75	125	16	20	

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Calcium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	100		98.62	mg/L	99	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.3	0.3			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.3	0.3			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	67.98972		68.14	mg/L	100	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	67.98972	14.3	82.75	mg/L	101	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	67.98972	14.3	82.74	mg/L	101	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			8.9	9.77	mg/L				9	20	

Calcium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	100		101.2	mg/L	101	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.3	0.3			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-30	30			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	4760		4550	mg/Kg		3890	5640			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	4760		5017	mg/Kg		3890	5640	10	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	7002.94116	9600	15645.7	mg/Kg	86	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	7002.94116	9600	15975.3	mg/Kg	91	75	125	2	20	

Carbon, total (TC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
WG527283LCSS	LCSS	09/16/21 9:12	PCN63155	4.35		4.4	%	101	80	120			
L68443-01DUP	DUP	09/16/21 9:36			2.9	3	%				3	20	

Carbon, total inorganic (TIC) ASA No. 9 29-2.2.4 (calc TC - TOC)

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
L68443-01DUP	DUP	09/16/21 9:36			.6	.8	%				29	20	RA

Carbon, total organic (TOC) ASA No.9 29-2.2.4 Combustion/IR

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527283													
WG527283PBS	PBS	09/16/21 9:00				U	%		-0.3	0.3			
L68443-01DUP	DUP	09/16/21 9:36			2.3	2.2	%				4	20	

Conductivity @25C SM2510B

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527388													
L68444-08DUP	DUP	09/17/21 4:18			.312	.269	mmhos/cm				15	20	

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Copper (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05046	mg/L	101	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0024	0.0024			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0024	0.0024			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	.0223	.06903	mg/L	93	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	.0223	.06844	mg/L	92	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			.0156	.01388	mg/L				12	20	
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04668	mg/L	93	80	120			

Copper, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05238	mg/L	105	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0024	0.0024			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-1.2	1.2			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	54.9		53.36907	mg/Kg		46.1	63.6			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	54.9		53.20929	mg/Kg		46.1	63.6	0	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.25	284	309.81021	mg/Kg	102	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.25	284	299.15211	mg/Kg	60	75	125	4	20	M3

Iron (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.897	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.18	0.18			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.18	0.18			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	1.0001		.99	mg/L	99	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	1.0001	.247	1.079	mg/L	83	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	1.0001	.247	1.085	mg/L	84	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			.215	.107	mg/L				67	20	RA

Iron, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.007	mg/L	100	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.18	0.18			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-18	18			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	14100		15400	mg/Kg		8470	19700			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	14100		15640	mg/Kg		8470	19700	2	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	103.0103	22000	22268.6	mg/Kg	261	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	103.0103	22000	22031.7	mg/Kg	31	75	125	1	20	M3

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Lead (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05008	mg/L	100	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0003	0.0003			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0003	0.0003			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05005	.00012	.0473	mg/L	94	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05005	.00012	.04716	mg/L	94	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.0003	.00015	mg/L				67	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05005		.04583	mg/L	92	80	120			

Lead, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05128	mg/L	103	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0003	0.0003			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.15	0.15			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	130		131.86256	mg/Kg		107	152			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	130		133.56237	mg/Kg		107	152	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.27525	17.9	43.82527	mg/Kg	103	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.27525	17.9	48.92623	mg/Kg	123	75	125	11	20	

Magnesium (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	100		95.75	mg/L	96	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.6	0.6			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.6	0.6			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	49.99828		48.03	mg/L	96	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	49.99828	1.39	49.8	mg/L	97	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	49.99828	1.39	49.79	mg/L	97	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			.96	1.01	mg/L				5	20	RA

Magnesium, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	100		98.2	mg/L	98	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.6	0.6			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-60	60			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	2320		2257	mg/Kg		1760	2880			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	2320		2284	mg/Kg		1760	2880	1	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	5149.82284	6310	10990.1	mg/Kg	91	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	5149.82284	6310	10948.9	mg/Kg	90	75	125	0	20	

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Manganese (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.899	mg/L	95	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.03	0.03			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.03	0.03			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.5005		.482	mg/L	96	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.5005	U	.483	mg/L	97	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.5005	U	.484	mg/L	97	75	125	0	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Manganese, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		1.996	mg/L	100	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.03	0.03			
WG527218PBS	PBS	09/18/21 0:03				1.14	mg/Kg		-3	3			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	269		268.8	mg/Kg		221	317			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	269		323.2	mg/Kg		221	317	18	20	RL
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.5515	782	768.483	mg/Kg	-26	75	125			M3
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.5515	782	764.981	mg/Kg	-33	75	125	0	20	M3

Mercury (1312) M7470A CVAA

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527320													
WG527320ICV	ICV	09/16/21 11:59	HG210913-3	.00501		.00513	mg/L	102	95	105			
WG527320ICB	ICB	09/16/21 12:00				U	mg/L		-0.0002	0.0002			
WG527317													
WG527145PBS	PBS	09/16/21 12:36				U	mg/L		-0.0006	0.0006			
WG527145LFB1	LFB	09/16/21 12:37	HG210913-6	.002002		.00198	mg/L	99	85	115			
L68443-01MS	MS	09/16/21 12:39	HG210913-6	.002002	U	.00186	mg/L	93	85	115			
L68443-01MSD	MSD	09/16/21 12:40	HG210913-6	.002002	U	.00189	mg/L	94	85	115	2	20	
L68444-01DUP	DUP	09/16/21 12:41			U	U	mg/L				0	20	RA

Mercury by Direct Combustion AA M7473 CVAAS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG520390													
WG520390ICV4	ICV	06/04/21 12:43	HG210603-2	10000		10200	ng/g	102	90	110			
WG527524													
WG527524ICV1	ICV	09/20/21 9:22	HG210603-4	100		99.8	ng/g	100	90	110			
WG527524ICV2	ICV	09/20/21 9:29	HG210603-4	100		103	ng/g	103	90	110			
WG527524ICV3	ICV	09/20/21 9:36	HG210915-1	1000		1050	ng/g	105	90	110			
WG527524ICV4	ICV	09/20/21 9:43	HG210603-2	10000		10300	ng/g	103	90	110			
WG527524PBS	PBS	09/20/21 9:59				U	ng/g		-4.77	4.77			
WG527524LCSS	LCSS	09/20/21 10:07	PCN60050	90		83.7	ng/g		80	120			
WG527524LCSSD	LCSSD	09/20/21 10:15	PCN60050	90		83.9	ng/g		80	120	0	20	
L68238-01DUP	DUP	09/20/21 10:32			30.1	67.3	ng/g				76	20	RA
L68444-01MS	MS	09/20/21 10:56	HG210915-1				ng/g	96	80	120			
L68444-02DUP	DUP	09/20/21 11:12			33.8	33.7	ng/g				0	20	

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Molybdenum (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.95	mg/L	98	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.06	0.06			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.06	0.06			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.501		.478	mg/L	95	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.501	U	.483	mg/L	96	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.501	U	.487	mg/L	97	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Molybdenum, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.048	mg/L	102	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.06	0.06			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-6	6			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	95.4		94.82	mg/Kg		76.4	114			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	95.4		94.59	mg/Kg		76.4	114	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.603	4.46	48.153	mg/Kg	85	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.603	4.46	47.256	mg/Kg	83	75	125	2	20	

Nickel (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05138	mg/L	103	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0012	0.0012			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0012	0.0012			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	.00068	.04722	mg/L	93	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	.00068	.04749	mg/L	94	75	125	1	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04667	mg/L	93	80	120			

Nickel, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.0514	mg/L	103	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0012	0.0012			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.6	0.6			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	53.9		51.8969	mg/Kg		44.5	63.3			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	53.9		51.28441	mg/Kg		44.5	63.3	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.25	9.7	31.89597	mg/Kg	88	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.25	9.7	35.91793	mg/Kg	104	75	125	12	20	

pH, Saturated Paste EPA 600/2-78-054 section 3.2.2

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527388													
WG527388ICV	ICV	09/16/21 17:18	PCN63115	4.01		4	units	100	3.9	4.1			
L68444-08DUP	DUP	09/17/21 4:18			8.1	8.08	units				0	20	

Hudbay Minerals

ACZ Project ID: ***L68444***

NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Selenium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05031	mg/L	101	90	110			
WG527659ICB	ICB	09/21/21 12:48				.00017	mg/L		-0.0003	0.0003			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0003	0.0003			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	U	.04617	mg/L	92	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	U	.04605	mg/L	92	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			.00019	.00015	mg/L				24	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04553	mg/L	91	80	120			

Selenium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.04999	mg/L	100	90	110			
WG527473ICB	ICB	09/17/21 14:16				.00011	mg/L		-0.0003	0.0003			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.15	0.15			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	167		161.91786	mg/Kg		132	201			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	167		164.28463	mg/Kg		132	201	1	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	12.625	.146	10.61613	mg/Kg	83	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	12.625	.146	12.52734	mg/Kg	98	75	125	17	20	

Solids, Percent D2216-80

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527111													
WG527111PBS	PBS	09/14/21 9:30				U	%		-0.1	0.1			
L68443-01DUP	DUP	09/14/21 11:57			86.9	86.7	%				0	20	

Sulfur, total ASTM D-4239-85C, LECO Furnace

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527282													
WG527282PBS	PBS	09/16/21 9:00				U	%		-0.03	0.03			
WG527282LCSS	LCSS	09/16/21 9:03	PCN63155	4.01		3.41	%	85	80	120			
L68443-01MS	MS	09/16/21 9:11	PCN63758	1.3	.03	1.34	%	101	80	120			
L68443-01DUP	DUP	09/16/21 9:15			.03	.04	%				29	20	RA

Thallium (1312) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527659													
WG527659ICV	ICV	09/21/21 12:46	MS210727-2	.05		.05045	mg/L	101	90	110			
WG527659ICB	ICB	09/21/21 12:48				U	mg/L		-0.0003	0.0003			
WG527145PBS	PBS	09/21/21 12:59				U	mg/L		-0.0003	0.0003			
L68443-02MS	MS	09/21/21 13:06	MS210827-2	.05	U	.04555	mg/L	91	75	125			
L68443-02MSD	MSD	09/21/21 13:08	MS210827-2	.05	U	.04548	mg/L	91	75	125	0	20	
L68444-01DUP	DUP	09/21/21 13:17			U	U	mg/L				0	20	RA
WG527145LFB2	LFB	09/21/21 13:19	MS210827-2	.05		.04419	mg/L	88	80	120			

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NOTE: If the Rec% column is null, the high/low limits are in the same units as the result. If the Rec% column is not null, then the high/low limits are in % Rec.

Thallium, total (3050) M6020B ICP-MS

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527473													
WG527473ICV	ICV	09/17/21 14:14	MS210727-2	.05		.05155	mg/L	103	90	110			
WG527473ICB	ICB	09/17/21 14:16				U	mg/L		-0.0003	0.0003			
WG527218PBS	PBS	09/17/21 14:25				U	mg/Kg		-0.15	0.15			
WG527218LCSS	LCSS	09/17/21 14:27	PCN63759	112		107.56208	mg/Kg		90.3	133			
WG527218LCSSD	LCSSD	09/17/21 14:29	PCN63759	112		110.18204	mg/Kg		90.3	133	2	20	
L68444-01MS	MS	09/17/21 14:42	MS210826-5	25.25	.221	24.24893	mg/Kg	95	75	125			
L68444-01MSD	MSD	09/17/21 14:44	MS210826-5	25.25	.221	28.8166	mg/Kg	113	75	125	17	20	

Zinc (1312) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527478													
WG527478ICV	ICV	09/17/21 19:33	II210823-1	2		1.922	mg/L	96	90	110			
WG527478ICB	ICB	09/17/21 19:37				U	mg/L		-0.06	0.06			
WG527145PBS	PBS	09/17/21 20:01				U	mg/L		-0.06	0.06			
WG527145LFB1	LFB	09/17/21 20:05	II210910-2	.50045		.505	mg/L	101	80	120			
L68443-01MS	MS	09/17/21 20:13	II210910-2	.50045	U	.506	mg/L	101	75	125			
L68443-01MSD	MSD	09/17/21 20:17	II210910-2	.50045	U	.509	mg/L	102	75	125	1	20	
L68444-01DUP	DUP	09/17/21 20:33			U	U	mg/L				0	20	RA

Zinc, total (3050) M6010D ICP

ACZ ID	Type	Analyzed	PCN/SCN	QC	Sample	Found	Units	Rec%	Lower	Upper	RPD	Limit	Qual
WG527480													
WG527480ICV	ICV	09/17/21 23:35	II210823-1	2		2.027	mg/L	101	90	110			
WG527480ICB	ICB	09/17/21 23:39				U	mg/L		-0.06	0.06			
WG527218PBS	PBS	09/18/21 0:03				U	mg/Kg		-6	6			
WG527218LCSS	LCSS	09/18/21 0:07	PCN63759	158		156.3	mg/Kg		128	188			
WG527218LCSSD	LCSSD	09/18/21 0:11	PCN63759	158		156.1	mg/Kg		128	188	0	20	
L68443-01MS	MS	09/18/21 0:18	II210910-2	51.54635	130	177.881	mg/Kg	93	75	125			
L68443-01MSD	MSD	09/18/21 0:23	II210910-2	51.54635	130	176.645	mg/Kg	90	75	125	1	20	

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-01	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-02	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-03	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-07	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-08	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-09	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-10	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-11	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

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ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-12	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

Hudbay Minerals ACZ Project ID: ***L68444***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Hudbay Minerals ACZ Project ID: ***L68444***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
L68444-13	WG527478	Aluminum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Aluminum, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Antimony (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527473	Antimony, total (3050)	M6020B ICP-MS	M2	Matrix spike recovery was low, the recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Cadmium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527283	Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
		Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	Q6	Sample was received above recommended temperature.
			ASA No. 9 29-2.2.4 (calc TC - TOC)	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	Q6	Sample was received above recommended temperature.
			ASA No.9 29-2.2.4 Combustion/IR	ZQ	Analyte was not evaluated in the laboratory control standard. Either the analyte is not included in the scope of the analytical method or a commercial standard containing the analyte is not available.
	WG527473	Copper, total (3050)	M6020B ICP-MS	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527478	Iron (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
			M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.
	WG527480	Iron, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
	WG527659	Lead (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Magnesium (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Manganese (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Manganese, total (3050)	M6010D ICP	M3	The spike recovery value is unusable since the analyte concentration in the sample is disproportionate to the spike level. The recovery of the associated control sample (LCS or LFB) was acceptable.
			M6010D ICP	RL	Recovery for either the LCS or LCS duplicate was outside of the acceptance limits; the RPD was within the acceptance limits.
	WG527317	Mercury (1312)	M7470A CVAA	Q6	Sample was received above recommended temperature.
			M7470A CVAA	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527524	Mercury by Direct Combustion AA	M7473 CVAAS	Q6	Sample was received above recommended temperature.
	WG527478	Molybdenum (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated

Hudbay Minerals ACZ Project ID: ***L68444***

ACZ ID	WORKNUM	PARAMETER	METHOD	QUAL	DESCRIPTION
					sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Nickel (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
		Selenium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527282	Sulfur, total	ASTM D-4239-85C, LECO Furnace	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527659	Thallium (1312)	M6020B ICP-MS	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527478	Zinc (1312)	M6010D ICP	RA	Relative Percent Difference (RPD) was not used for data validation because the concentration of the duplicated sample is too low for accurate evaluation (< 10x MDL).
	WG527480	Zinc, total (3050)	M6010D ICP	ZG	The ICP or ICP-MS Serial Dilution was not used for data validation because the sample concentration was less than 50 times the MDL.

Metals Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Selenium (1312)	M6020B ICP-MS
Selenium, total (3050)	M6020B ICP-MS

Soil Analysis

The following parameters are not offered for certification or are not covered by AZ certificate #AZ0102.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace
The following parameters are not offered for certification or are not covered by NELAC certificate #ACZ.	
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR
Conductivity @25C	SM2510B
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2
Solids, Percent	D2216-80
Sulfur, total	ASTM D-4239-85C, LECO Furnace

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID: L68444
Date Received: 09/13/2021 16:02
Received By:
Date Printed: 9/14/2021

Receipt Verification

	YES	NO	NA
1) Is a foreign soil permit included for applicable samples?			X
2) Is the Chain of Custody form or other directive shipping papers present?	X		
3) Does this project require special handling procedures such as CLP protocol?		X	
4) Are any samples NRC licensable material?			X
5) If samples are received past hold time, proceed with requested short hold time analyses?	X		
6) Is the Chain of Custody form complete and accurate?	X		
7) Were any changes made to the Chain of Custody form prior to ACZ receiving the samples?		X	

Samples/Containers

	YES	NO	NA
8) Are all containers intact and with no leaks?	X		
9) Are all labels on containers and are they intact and legible?	X		
10) Do the sample labels and Chain of Custody form match for Sample ID, Date, and Time?	X		
11) For preserved bottle types, was the pH checked and within limits? [1]			X
12) Is there sufficient sample volume to perform all requested work?	X		
13) Is the custody seal intact on all containers?			X
14) Are samples that require zero headspace acceptable?			X
15) Are all sample containers appropriate for analytical requirements?	X		
16) Is there an Hg-1631 trip blank present?			X
17) Is there a VOA trip blank present?			X
18) Were all samples received within hold time?	X		

NA indicates Not Applicable

Chain of Custody Related Remarks

Client Contact Remarks

Shipping Containers

Cooler Id	Temp(°C)	Temp Criteria(°C)	Rad(µR/Hr)	Custody Seal Intact?
NA35913	23	NA	15	N/A

Was ice present in the shipment container(s)?

No - Wet or gel ice was not present in the shipment container(s).

Client must contact an ACZ Project Manager if analysis should not proceed for samples received outside of their thermal preservation acceptance criteria.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Sample Receipt

Hudbay Minerals

ACZ Project ID:	L68444
Date Received:	09/13/2021 16:02
Received By:	
Date Printed:	9/14/2021

[1] The preservation of the following bottle types is not checked at sample receipt: Orange (oil and grease), Purple (total cyanide), Pink (dissolved cyanide), Brown (arsenic speciation), Sterile (fecal coliform), EDTA (sulfite), HCl preserved vial (organics), Na2S2O3 preserved vial (organics), and HG-1631 (total/dissolved mercury by method 1631).

ACZ Laboratories, Inc. L68444

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy	Address: 5255 E. Williams Circle, Suite 1065
Company: Hudbay Minerals	
E-mail: holly.beggy@hudbayminerals.com	Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek	E-mail: 5255 E. Williams Circle, Suite 1065
Company: david.krizek@hudbayminerals.com	Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia	Address: 5255 E. Williams Circle, Suite 1065
Company: Hudbay Minerals	
E-mail: rosemontinvoices@hudbayminerals.com	Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: Holly Beggy **Sampler's Site Information** **State** AZ **Zip code** 85629 **Time Zone** AZ

***Sampler's Signature:** Holly Beggy

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS

PO#:

Reporting state for compliance testing: No

Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4 — RUSH	Ina Road WWTP-Soil	Plant Tissue					
D1-19South	9/9/21 2:10	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D1-20	1:45		1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D1-21	11:30		1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D1-22	8:10		1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D1-23	10:50		1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
D1-24	10:10		1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

~~Samples have been sieved to 4mm with a #5 sieve.~~ 4mm

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Holly Beggy Holly Beggy	9/9/21, 3:35	[signature] 9/13/21	10:00

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

L68444 Chain of Custod

ACZ Laboratories, Inc. L68444

2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

CHAIN of CUSTODY

Report to:

Name: Holly Beggy
Company: Hudbay Minerals
E-mail: holly.beggy@hudbayminerals.com
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-343-5174

Copy of Report to:

Name: David Krizek
Company: david.krizek@hudbayminerals.com
E-mail: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3527

Invoice to:

Name: Lionelyn Garcia
Company: Hudbay Minerals
E-mail: rosemontinvoices@hudbayminerals.c
Address: 5255 E. Williams Circle, Suite 1065
Telephone: 520-495-3545

If sample(s) received past holding time (HT), or if insufficient HT remains to complete analysis before expiration, shall ACZ proceed with requested short HT analyses? YES [X] NO [ ]

If "NO" then ACZ will contact client for further instruction. If neither "YES" nor "NO" is indicated, ACZ will proceed with the requested analyses, even if HT is expired, and data will be qualified

Are samples for SDWA Compliance Monitoring? Yes [ ] No [X]

If yes, please include state forms. Results will be reported to PQL for Colorado.

Sampler's Name: David Krizek **Sampler's Site Information** State AZ Zip code 857[illegible] Time Zone AZ

***Sampler's Signature:** [signature]

*I attest to the authenticity and validity of this sample. I understand that intentionally mislabeling the time/date/location or tampering with the sample in anyway, is considered fraud and punishable by State Law.

PROJECT INFORMATION

Quote #: 2021-SOILS
PO#:
Reporting state for compliance testing: No
Check box if samples include NRC licensed material? [ ]

ANALYSES REQUESTED *(attach list or use quote number)*

SAMPLE IDENTIFICATION	DATE:TIME	Matrix	# of Containers	Drainage-1 (Under Plant)	Drainage 1-2-3-4 ~ RUSH	Ina Road WWTP-Soil	Plant Tissue					
SCR-2	9/9/2021 12:06	SO	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-2B	9/9/2021 12:06	"	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-3	9/9/2021 11:20	"	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-4	9/9/2021 10:35	"	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-5	9/9/2021 9:45	"	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-6	9/9/2021 1:30pm	"	1	[ ]	[X]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
SCR-SJ	9/9/2021, 12:50	↓	1	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]
				[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]	[ ]

Matrix: SW (Surface Water) · GW (Ground Water) · WW (Waste Water) · DW (Drinking Water) · SL (Sludge) · SO (Soil) · OL (Oil) · Other (Specify)

REMARKS

Samples have been sieved to 4mm with a #5 sieve.

Please refer to ACZ's terms & conditions located on the reverse side of this COC.

RELINQUISHED BY:	DATE:TIME	RECEIVED BY:	DATE:TIME
Holly Beggy Holly Beggy	9/9/21, 3:35	[signature] 9/13/21	16:00

FRMAD050.06.14.14 White - Return with sample. Yellow - Retain for your records.

ACZ Laboratories, Inc.
2773 Downhill Drive Steamboat Springs, CO 80487 (800) 334-5493

Analytical Quote

9/7/2021

Quote Number: DRAINAGE-2-3-4-RUSH

Matrix: Soil RUSH -Drainages 2, 3 & 4: 96 samples: SPLP, TIC, TS, 3050 Metals, Paste PH & EC

Parameter	Method	Detection Limit	Cost/Sample
Admin			
Electronic Data Deliverable			$0.00
Diskette/QC Summary			
Quality Control Summary			$0.00
Inorganic Prep			
Total Hot Plate Digestion (1312)	M3010A ICP		$0.00
Total Hot Plate Digestion (1312)	M3010A ICP-MS		$0.00
Metals Analysis			
Aluminum (1312)	M6010D ICP	0.05 mg/L	$7.50
Aluminum, total (3050)	M6010D ICP	5 mg/Kg	$7.50
Antimony (1312)	M6020B ICP-MS	0.0004 mg/L	$24.37
Antimony, total (3050)	M6020B ICP-MS	0.2 mg/Kg	$24.37
Arsenic (1312)	M6020B ICP-MS	0.0002 mg/L	$12.00
Arsenic, total (3050)	M6020B ICP-MS	0.1 mg/Kg	$12.00
Cadmium (1312)	M6020B ICP-MS	0.00005 mg/L	$24.37
Cadmium, total (3050)	M6020B ICP-MS	0.025 mg/Kg	$24.37
Calcium (1312)	M6010D ICP	0.1 mg/L	$12.81
Calcium, total (3050)	M6010D ICP	10 mg/Kg	$12.81
Copper (1312)	M6020B ICP-MS	0.0008 mg/L	$24.37
Copper, total (3050)	M6020B ICP-MS	0.4 mg/Kg	$24.37
Iron (1312)	M6010D ICP	0.06 mg/L	$12.81
Iron, total (3050)	M6010D ICP	6 mg/Kg	$12.81
Lead (1312)	M6020B ICP-MS	0.0001 mg/L	$24.37
Lead, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$24.37
Magnesium (1312)	M6010D ICP	0.2 mg/L	$12.81
Magnesium, total (3050)	M6010D ICP	20 mg/Kg	$12.81
Manganese (1312)	M6010D ICP	0.01 mg/L	$12.81
Manganese, total (3050)	M6010D ICP	1 mg/Kg	$12.81
Mercury (1312)	M7470A CVAA	0.0002 mg/L	$33.44
Mercury by Direct Combustion AA	M7473 CVAAS	2 ng/g	$30.94
Molybdenum (1312)	M6010D ICP	0.02 mg/L	$12.81
Molybdenum, total (3050)	M6010D ICP	2 mg/Kg	$12.81
Nickel (1312)	M6020B ICP-MS	0.0004 mg/L	$24.37
Nickel, total (3050)	M6020B ICP-MS	0.2 mg/Kg	$24.37

Selenium (1312)	M6020B ICP-MS	0.0001 mg/L	$24.37
Selenium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$24.37
Thallium (1312)	M6020B ICP-MS	0.0001 mg/L	$24.37
Thallium, total (3050)	M6020B ICP-MS	0.05 mg/Kg	$24.37
Zinc (1312)	M6010D ICP	0.02 mg/L	$12.81
Zinc, total (3050)	M6010D ICP	2 mg/Kg	$12.81
Sample Preparation			
Air Dry at 34 Degrees C	USDA No. 1, 1972		$10.31
Digestion - Hot Plate	M3050B ICP		$20.62
Digestion - Hot Plate	M3050B ICP-MS		$0.00
Saturated Paste Extraction	USDA No. 60 (2)		$23.12
Sieve-2000 um (2.0mm)	ASA No.9, 15-4.2.2		$15.31
Sieve-250 um (60 mesh)	ASA No.9, 15-4.2.2		$0.00
Synthetic Precip. Leaching Procedure	M1312		$96.56
Soil Analysis			
Carbon, total (TC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	$23.12
Carbon, total inorganic (TIC)	ASA No. 9 29-2.2.4 (calc TC - TOC)	0.1 %	$0.00
Carbon, total organic (TOC)	ASA No.9 29-2.2.4 Combustion/IR	0.1 %	$41.25
Conductivity @25C	SM2510B	0.001 mmhos/cm	$10.31
pH, Saturated Paste	EPA 600/2-78-054 section 3.2.2	0.1 units	$10.31
Solids, Percent	D2216-80	0.1 %	$10.31
Sulfur, total	ASTM D-4239-85C, LECO Furnace	0.01 %	$23.12
		Cost/Sample:	**$882.62**

This quote is based on a RUSH Turn Around Time of approximately 7 working days for soil and solid matrices. TAT may vary with seasonal heavy workload. Please contact your PM if rush TAT is required. Rush TAT needs to be pre-approved prior to sample shipment to assure that due dates can be met. Pricing includes standard reporting formats and standard ACZ EDDs. All projects received are subject to a $150.00 Minimum Charge. Please note that method detection limits are estimates and may be elevated depending on sample matrix that require dilution. Pricing includes coolers, soil jars or bags, labels, COCs and ice-packs (if needed for your analysis), shipped to your site or office via UPS ground. Return shipping is the responsibility of the client. Please allow ample time for your bottles to arrive. Please note that soil preparation charges may change based on the condition and volume of sample(s) upon receipt. Wet samples may increase the TAT if air-drying is needed required.

Quote Number: DRAINAGE-2-3-4-RUSH

CONTRACT DETAILS
Pricing includes shipment of all standard sample containers and related paperwork by UPS Ground Service. Please allow three to five days for delivery when ordering containers. Please notify your Project Manager prior to sending any samples with special requests such as electronic data deliverables or special reporting requirements. Additional charges may apply for non-standard requests including special sample containers and express shipping.

This quotation is valid for six months from the bid date unless specified otherwise in the bid. All bids must be signed and returned to ACZ before the project is received. The authorized signature represents acceptance of the pricing as well as the general terms and conditions of ACZ Laboratories, Inc. which may be downloaded from our web site at https://acz.com/wp-content/uploads/2020/05/ACZ_Terms_Conditions.pdf. Please note that MDLs in this quote are not static and my change due to sample matrix or samples with high TDS.

All orders are subject to a minimum charge of $150.00. Samples may incur a $11.00/sample disposal fee for any samples deemed to be hazardous.

ACZ Representative (Authorized signature and date)

Client Representative (Authorized signature and date)